

Examiner's amendment

IN THE CLAIMS:

Please amend claim 4 as shown below in the LISTING OF CLAIMS.

Claim 1 (original): A transmitting and receiving apparatus comprising: modulating means for modulating an input digital data; first frequency converting means for converting a signal output from said modulating means into a signal of a predetermined frequency; amplifying/branching means for amplifying and branching a signal output from said first frequency converting means; second frequency converting means for converting a signal output from said amplifying/branching means, into a signal of a predetermined frequency; and demodulating means for demodulating a digital data from a signal output from said second frequency converting means, wherein

each of said first and second frequency converting means comprises a PLL frequency synthesizer,

said demodulating means has a carrier recovery section, and

natural angular frequencies of said PLL frequency synthesizers are set to be equal to a maximum frequency of mechanical vibrations which are externally applied, or in a predetermined width above and below the maximum frequency, or

a loop filter bandwidth of said carrier recovery section is set to be higher by a predetermined amount than the maximum frequency of mechanical vibrations which are externally applied.

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Claim ³~~2~~ (original): A transmitting and receiving apparatus according to claim 1, wherein the predetermined width is a range of $\pm 50\%$ above and below with respect ^{to}~~the~~ maximum frequency, and the predetermined amount is 5 kHz.

Claim ²~~2~~ (original): A transmitting and receiving apparatus according to claim 1, wherein each of said PLL frequency synthesizers has:

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a PLL synthesizer IC to which a crystal oscillator is externally connected; a loop filter which filters a signal ^{output}~~output~~ from said PLL synthesizer IC; a voltage controlled oscillator in which an oscillation frequency is changed in accordance with a signal output from said loop filter; an amplifying IC which amplifies a signal output from said voltage controlled oscillator; and a branch coil which branches a signal output from said amplifying IC, and one of signals output from said branch coil is input to said PLL synthesizer IC.

Claim ⁶~~4~~ (currently amended): A transmitting and receiving apparatus according to claim ³~~2~~, wherein each of said PLL frequency synthesizers has:

a PLL synthesizer IC to which a crystal oscillator is externally connected; a loop filter which filters a signal output from said PLL synthesizer IC; a voltage controlled oscillator in which an oscillation frequency is changed in accordance with a signal output from said loop filter; an amplifying IC which amplifies a signal output from said voltage controlled oscillator; and a branch coil which branches a signal output from said amplifying IC, and one of signals ~~output~~ branched from said branch coil is input to said PLL synthesizer IC.

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Claim ~~5~~ (original): A transmitting and receiving apparatus according to claim 1, wherein said carrier recovery section has:

an A/D conversion section which converts an input analog signal into a digital signal; a quadrature detection section which performs quadrature calculation on a data output from said A/D conversion section; a modulating component removal section which removes modulating components from a data output from said quadrature detection section; a digital filter section which filters a data output from said modulating component removal section; and an oscillation section in which an oscillation frequency is changed in accordance with a data output from said digital filter section, and

each of said oscillation section and said A/D conversion section input a data to said quadrature detection section.

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Claim ~~6~~ (original): A transmitting and receiving apparatus according to claim ³~~2~~, wherein said carrier recovery section has:

an A/D conversion section which converts an input analog signal into a digital signal; a quadrature detection section which performs quadrature calculation on a data output from said A/D conversion section; a modulating component removal section which removes modulating components from a data output from said quadrature detection section; a digital filter section which filters a data output from said modulating component removal section; and an oscillation section in which an oscillation frequency is changed in accordance with a data output from said digital filter section, and

each of said oscillation section and said A/D conversion section input a data to said quadrature detection section.

Claim ⁴~~7~~(original): A transmitting and receiving apparatus according to claim 1, wherein a phase comparison frequency of a PLL synthesizer IC included in said PLL frequency synthesizer is set to be higher than the maximum frequency of mechanical vibrations which are externally applied.

Claim 8 (original): A transmitting and receiving apparatus according to claim ³~~2~~, wherein a phase comparison frequency of a PLL synthesizer IC included in said PLL frequency synthesizer is set to be higher than the maximum frequency of mechanical vibrations which are externally applied.

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Claim 9 ^{Cancelled}(original): A transmitting and receiving apparatus comprising: modulating means for modulating an input digital data; first frequency converting means for converting a signal output from said modulating means into a signal of a predetermined frequency; amplifying/branching means for amplifying and branching a signal output from said first frequency converting means; second frequency converting means for converting a signal output from said amplifying/branching means, into a signal of a predetermined frequency; and demodulating means for demodulating a digital data from a signal output from said second frequency converting means, wherein

each of said first and second frequency converting means comprises a PLL frequency synthesizer,

said demodulating means has a carrier recovery section, and

a coil used in an oscillation section of a voltage controlled oscillator included in each of said PLL frequency synthesizers is a microstrip line.

Cancelled
Claim 10 (~~original~~): A transmitting and receiving apparatus comprising: modulating means for modulating an input digital data; first frequency converting means for converting a signal output from said modulating means into a signal of a predetermined frequency; amplifying/branching means for amplifying and branching a signal output from said first frequency converting means; second frequency converting means for converting a signal output from said amplifying/branching means, into a signal of a predetermined frequency; and demodulating means for demodulating a digital data from a signal output from said second frequency converting means, wherein

each of said first and second frequency converting means comprises a PLL frequency synthesizer,

said demodulating means has a carrier recovery section, and

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a reinforcing plate is pasted to an upper side and/or a lower side of a microstrip line used in an oscillation section of a voltage controlled oscillator included in each of said PLL frequency synthesizers.

Cancelled
Claim 11 (~~original~~): A transmitting and receiving apparatus comprising: modulating means for modulating an input digital data; first frequency converting means for converting a signal output from said modulating means into a signal of a predetermined frequency; amplifying/branching means for amplifying and branching a signal output from said first frequency converting means; second frequency converting means for converting a signal output from said amplifying/branching means, into a signal of a predetermined frequency; and demodulating means for demodulating a digital data from a signal output from said second frequency converting means, wherein

each of said first and second frequency converting means comprises a PLL frequency synthesizer,

said demodulating means has a carrier recovery section, and
a coil used in an oscillation section of a voltage controlled oscillator included in each of
said PLL frequency synthesizers is of a chip surface mount type.

Cancelled
Claim 12 (~~original~~): A transmitting and receiving apparatus comprising: modulating means for
modulating an input digital data; first frequency converting means for converting a signal output
from said modulating means into a signal of a predetermined frequency; amplifying/branching
means for amplifying and branching a signal output from said first frequency converting means;
second frequency converting means for converting a signal output from said amplifying/branching
means, into a signal of a predetermined frequency; and demodulating means for demodulating a
digital data from a signal output from said second frequency converting means, wherein

each of said first and second frequency converting means comprises a PLL frequency
synthesizer,

said demodulating means has a carrier recovery section, and

a microstrip line used in an oscillation section of a voltage controlled oscillator included in
each of said PLL frequency synthesizers is formed by an inner layer of a printed circuit board.

Cancelled
Claim 13 (~~original~~): A transmitting and receiving apparatus comprising: modulating means for
modulating an input digital data; first frequency converting means for converting a signal output
from said modulating means into a signal of a predetermined frequency; amplifying/branching
means for amplifying and branching a signal output from said first frequency converting means;
second frequency converting means for converting a signal output from said amplifying/branching

means, into a signal of a predetermined frequency; and demodulating means for demodulating a digital data from a signal output from said second frequency converting means, wherein

each of said first and second frequency converting means comprises a PLL frequency synthesizer,

said demodulating means has a carrier recovery section, and

capacitors used in a loop filter and a voltage controlled oscillator included in each of said PLL frequency synthesizers are of a film type.

Cancelled
Claim 14 (~~original~~): A transmitting and receiving apparatus comprising: modulating means for modulating an input digital data; first frequency converting means for converting a signal output from said modulating means into a signal of a predetermined frequency; amplifying/branching means for amplifying and branching a signal output from said first frequency converting means; second frequency converting means for converting a signal output from said amplifying/branching means, into a signal of a predetermined frequency; and demodulating means for demodulating a digital data from a signal output from said second frequency converting means, wherein

each of said first and second frequency converting means comprises a PLL frequency synthesizer,

said demodulating means has a carrier recovery section, and

a reinforcing plate is pasted to an upper side and/or a lower side of a microstrip line used in an oscillation section of a voltage controlled oscillator included in each of said PLL frequency synthesizers, and a rubber member is inserted between said reinforcing plate and an outer shield cover.